Space Weather Forecast

Issued on Sunday, 19 June 2022 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily chance of an isolated moderate-class X-ray flare.
Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with occasional small common class X-ray flares. These flares were generally well-spread between many of the front-side sunspots, of which there were up to ten. The largest flare of the period was a middling common-class observed from one of the larger and historically more productive regions at 18/2105UTC in the southwestern quarter of the sun, this despite this group having shown a reduction in area and shrinking trailing spots in the period.
Most of the current roster of sunspots are small and magnetically simple: either unipolar or simple magnetic dipoles. Of the remainder, the two most noteworthy were in the northern solar hemisphere, although neither produced particularly marked flare activity.
A large 'filament' (arc of plasma) in the northwest showed some movement into the early evening UTC, as did a smaller feature in the northeast at the end of the 24 hours, with the later producing a small Coronal Mass Ejection (CME), which is forecast to pass to the north and east of Earth, and thus there were no Earth directed CMEs observed during the period.

Solar Wind / Geomagnetic Activity:
The solar wind was relatively static in the past 24 hours and is presumed to remain characteristic of a continuing fast wind from a positive coronal hole. The solar wind speed was elevated or strong, between 550 km/s and 630 km/s. The total magnetic field was within normal background levels, with only weak variations in the north-south component. The net result of the above solar wind measures was Quiet to Active (Kp 2-4), but the interval 18/2100-2400 UTC was initially recorded as G1/Minor Storm.

Energetic Particles / Solar Radiation: The high energy proton flux remained at background, with so solar radiation storms observed in the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be low, with a daily chance of an isolated moderate-class flare.

Solar Wind / Geomagnetic Activity: No CMEs feature in the forecast. Elevated solar winds being experienced at present, are expected to decline to slow levels by day 3 (21st). Geomagnetic activity should therefore peak on day 1 (19th), with a slight chance of a Minor Storm interval, else gradually decreasing to mainly Quiet conditions by day 3 (21st).

Energetic Particles / Solar Radiation: Solar radiation storms are not likely in the period and should remain at background levels. There is a daily slight chance of an S1 or greater event occurring, with this mainly due to the presence of three larger and relatively complex regions.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	20
Very Active	R3 to R5 X	No	5	5	5	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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